

No.

200500183



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*Shamrock Seed Company, Inc.*

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

LETTUCE

'Blockbuster'

*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-ninth day of November, in the year two thousand and seven.*

Attest:

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

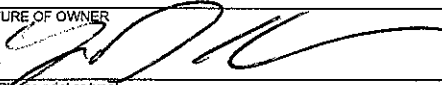
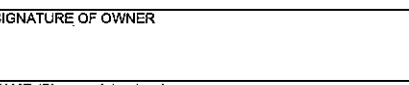
Secretary of Agriculture

**U.S. DEPARTMENT OF AGRICULTURE**  
**AGRICULTURAL MARKETING SERVICE**  
**SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE**

**APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE**  
*(Instructions and information collection burden statement on reverse)*

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

<b>1. NAME OF OWNER</b>  Shamrock Seed Company, Inc.		<b>2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME</b>  SSC 1370		<b>3. VARIETY NAME</b>  Blockbuster (cleared)	
<b>4. ADDRESS</b> <i>(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)</i>  3 Harris Place Salinas, CA 93901 USA		<b>5. TELEPHONE</b> <i>(include area code)</i>  (831) 771-1500		<div style="border: 1px solid black; padding: 5px;"> <b>FOR OFFICIAL USE ONLY</b>  <b>PVPO NUMBER</b>  <div style="font-size: 2em; font-weight: bold;">200500183</div> <b>FILING DATE</b>  <div style="font-size: 1.5em;">March 21, 2005</div> </div>	
<b>6. FAX</b> <i>(include area code)</i>  (831) 771-1517		<b>7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION</b> <i>(corporation, partnership, association, etc.)</i>  Corporation			
<b>8. IF INCORPORATED, GIVE STATE OF INCORPORATION</b>  CA		<b>9. DATE OF INCORPORATION</b>  January 1, 1983		<div style="border: 1px solid black; padding: 5px;"> <b>FILING AND EXAMINATION FEES:</b>          \$ 3,652 -  <b>DATE</b> March 21, 2005  <b>CERTIFICATION FEE:</b>          \$ 768 -  <b>DATE</b> 10/19/2007       </div>	
<b>10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION.</b> <i>(First person listed will receive all papers)</i>  Larry D. Knerr, Ph.D. Shamrock Seed Co., Inc 3 Harris Place Salinas, CA 93901 USA					
<b>11. TELEPHONE</b> <i>(include area code)</i>  (831) 771-1500		<b>12. FAX</b> <i>(include area code)</i>  (831) 771-1517		<b>13. E-MAIL</b>  lknerr@shamrockseed.com	
<b>14. CROP KIND</b> <i>(Common Name)</i>  Lettuce		<b>16. FAMILY NAME</b> <i>(Botanical)</i>  Asteraceae		<b>18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL)</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
<b>15. GENUS AND SPECIES NAME OF CROP</b>  Lactuca sativa		<b>17. IS THE VARIETY A FIRST GENERATION HYBRID?</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<b>20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED?</b> <i>(See Section 83(a) of the Plant Variety Protection Act)</i> <input type="checkbox"/> YES <i>(If "yes", answer items 21 and 22 below)</i> <input checked="" type="checkbox"/> NO <i>(If "no", go to item 23)</i> <b>21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?</b> <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED <b>22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?</b> <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED <i>(If additional explanation is necessary, please use the space indicated on the reverse.)</i>	
<b>19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED</b> <i>(Follow instructions on reverse)</i> a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety <i>(Optional)</i> e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample <i>(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)</i> g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" <i>(Mail to the Plant Variety Protection Office)</i>					
<b>23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?</b> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO  IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. <i>(Please use space indicated on reverse.)</i>		<b>24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)?</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO  IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. <i>(Please use space indicated on reverse.)</i>			
<b>25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.</b>  The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.  Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					
<b>SIGNATURE OF OWNER</b> 		<b>SIGNATURE OF OWNER</b> 			
<b>NAME</b> <i>(Please print or type)</i>  Larry D. Knerr		<b>NAME</b> <i>(Please print or type)</i>  Larry D. Knerr			
<b>CAPACITY OR TITLE</b>  Research Director		<b>DATE</b>  03/04/2005		<b>CAPACITY OR TITLE</b>  Research Director	
<b>DATE</b>  03/04/2005		<b>DATE</b>  03/04/2005			

*(See reverse for instructions and information collection burden statement)*

## INSTRUCTIONS

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

**Plant Variety Protection Office**

**Telephone: (301) 504-5518**

**FAX: (301) 504-5291**

**Homepage:** <http://www.ams.usda.gov/science/pvpo/pvp.htm>

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 <http://www.ams.usda.gov/lsg/seed.htm>.

## ITEM

- 19a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;  
(2) the details of subsequent stages of selection and multiplication;  
(3) evidence of uniformity and stability; and  
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:  
(1) identify these varieties and state all differences objectively;  
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and  
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

**22. CONTINUED FROM FRONT** (Please provide a statement as to the limitation and sequence of generations that may be certified.)

**23. CONTINUED FROM FRONT** (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

April 1, 2004, United States, California

**24. CONTINUED FROM FRONT** (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

**NOTES:** It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

PVP Application, Salinas Group Lettuce (*Lactuca sativa*) 'Blockbuster'

## EXHIBIT A

## Origin and Breeding History of the Variety

'Blockbuster' was developed from an original cross, made in 1997. The female parent in this cross is the variety 'Del Rey'. The male parent in this cross is the variety 'Sequoia'. Through pedigree selection for plant type and field screening for tolerance to Lettuce Big Vein (LBV), a stable and uniform F5 line with LBV tolerance was selected in 2001 that was used as stock seed to produce 'Blockbuster'. Each generation of selection was carried out in Salinas, California. Selection criteria included, head shape, head size, head weight, heading ability, frame size, and LBV reaction. 'Blockbuster' has been reproduced and judged stable for the past three generations (2002 through 2004). 'Blockbuster' is uniform for all traits as described in Exhibit C and shows no variants other than what would normally be expected due to environment. The variant is an open plant type which resists forming a head and occurs at a frequency of less than 1% (0.67%). The pedigree, using notation adhered to by Shamrock Seed Company, for 'Blockbuster' is noted below.

[Del Rey x Sequoia]-A3A1(Bulk)

PVP Application, Salinas Group Lettuce (*Lactuca sativa*) 'Blockbuster'

## EXHIBIT B

## Statement of Distinctness

'Blockbuster' is most similar to the variety 'Jupiter'. The most widely grown, similar variety in the same planting slot as 'Blockbuster' is 'Cannery Row'. 'Blockbuster' has a lighter leaf color than 'Jupiter' or 'Cannery Row'. 'Blockbuster' is later to mature and has a higher head weight than either 'Jupiter' or 'Cannery Row'. Blockbuster was significantly heavier, at the 5% level, than Jupiter and Cannery row in each of four trials as demonstrated in 'Exhibit B, Attachment.' 'Blockbuster' also has a flattened butt midrib while the butt midrib of 'Jupiter' is moderately raised. The following table demonstrates the differences among these varieties:

Variety	Days to Maturity*	Color at Maturity**	Head Weight at Maturity***	Butt Midrib
Blockbuster	84.00	138C	552 g	Flattened
Jupiter	81.25	138B	487 g	Moderately Raised
Cannery Row	82.00	138B	516 g	Flattened

\*Average of 4 trials, spring and fall growing seasons, West Coast, USA

\*\*As determined by RHS color chart.

\*\*\*average weight of 96 heads, see attachment

PVP Application, Salinas Group Lettuce (*Lactuca sativa*) 'Blockbuster'

## EXHIBIT B, Attachment

## Statement of Distinctness

## Head Weight at Maturity (grams)

## Trial 1, Soledad, CA, planting date 1/16/04

Variety	N	Mean	SD	LSD(0.05)
Blockbuster	24	547.3	60.95	36.4
Jupiter	24	483.5	46.58	
Cannery Row	24	506.2	47.61	

## Trial 2, Soledad, CA, planting date 2/11/04

Blockbuster	24	573.8	49.46	34.8
Jupiter	24	507.6	52.31	
Cannery Row	24	537.0	44.62	

## Trial 3, Salinas, CA, planting date 3/4/04

Blockbuster	24	580.2	54.03	29.7
Jupiter	24	539.7	39.85	
Cannery Row	24	548.4	37.09	

## Trial 4, Castroville, CA, planting date 7/22/04

Blockbuster	24	505.1	51.56	30.7
Jupiter	24	471.5	45.85	
Cannery Row	24	468.3	40.80	

PVP Application, Salinas Group Lettuce (*Lactuca sativa*) 'Blockbuster'

## EXHIBIT B, Attachment

## Statement of Distinctness

## Raw Data, Mature Head Weight (grams)

## Trial 1

## Trial 2

Blockbuster	Jupiter	Cannery Row	Blockbuster	Jupiter	Cannery Row
566	475	516	575	455	542
520	510	560	503	539	479
589	463	489	522	581	521
492	428	502	580	479	494
425	558	569	644	405	600
610	510	425	602	552	582
545	436	542	550	507	545
593	490	509	533	573	515
620	571	524	611	514	560
410	403	530	518	498	603
499	455	490	525	553	556
575	493	483	640	511	503
587	480	444	588	540	532
555	490	567	551	577	443
652	560	510	522	537	557
541	405	525	658	389	541
631	469	514	613	473	561
469	520	410	563	470	591
599	490	430	555	531	595
505	480	585	647	466	554
554	498	540	599	556	474
523	449	481	539	523	534
526	545	548	498	433	552
550	427	456	636	520	455

PVP Application, Salinas Group Lettuce (*Lactuca sativa*) 'Blockbuster'

## EXHIBIT B, Attachment

## Statement of Distinctness

## Raw Data, Mature Head Weight (grams)

## Trial 3

Blockbuster	Jupiter	Cannery Row
606	566	513
533	469	618
504	514	572
572	551	506
619	592	575
567	530	538
591	604	550
630	584	517
576	508	596
649	446	501
532	509	579
578	531	602
624	600	532
497	557	563
522	572	581
615	544	528
559	539	547
478	510	563
627	554	494
650	512	530
514	533	598
678	586	483
621	537	555
583	504	520

## Trial 4

Blockbuster	Jupiter	Cannery Row
459	510	441
498	412	498
537	444	413
590	498	537
455	522	458
533	385	477
511	420	516
426	505	445
529	472	503
480	463	474
562	521	460
603	477	502
456	429	520
514	533	419
466	550	489
410	516	393
546	458	405
457	421	466
504	424	526
528	399	417
452	487	438
568	480	482
485	501	459
554	490	501



REPRODUCE LOCALLY. Include form number and date on all reproductions.

Exhibit C (Lettuce)  
Form Approved OMB NO 0581-0055

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY  
PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MD 20705

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY  
Lettuce (*Lactuca sativa* L.)

NAME OF APPLICANT (S) Shamrock Seed Company, Inc.	TEMPORARY OR EXPERIMENTAL DESIGNATION SSC 1370	VARIETY NAME Blockbuster (cleared)
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country) 3 Harris Place Salinas, CA 93901 USA		FOR OFFICIAL USE ONLY PVPO NUMBER 200500183

Place the appropriate number that describes the varietal character in the boxes below. Place a zero in the first box (e.g.    or   ) when number is either 99 or less or 9 or less. Measured data should be the mean of an appropriate number (at least 20) of well space plants. Royal Horticultural Society or any recognized color standard may be used to determine plant colors.

The Location of the Test Area is: West Coast (Gilroy, CA)	Color System Used: RHS
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SPECIFIC VARIETIES USED FOR COMPARISON AS CHECK VARIETIES IN THIS APPLICATION: Use standard regional check varieties, which are adapted to your area. One of the comparison varieties must be the most similar variety used in Exhibit B.

Application Variety (a1) Blockbuster Most Similar Variety (c1) Jupiter  
Standard Regional Check Variety (c2) Cannery Row

1. PLANT TYPE: (See List of Suggested Check Varieties on Page 8)

01 = Cutting/Leaf 02 = Butterhead 03 = Bibb	04 = Cos or Romaine 05 = Great Lakes Group 06 = Vanguard Group	07 = Salinas Group 08 = Eastern (Ithaca) Group 09 = Stem	10 = Latin 11 = Other (Specify) _____
(a1) <input type="text" value="0"/> <input type="text" value="7"/>	(c1) <input type="text" value="0"/> <input type="text" value="7"/>	(c2) <input type="text" value="0"/> <input type="text" value="7"/>	

2. SEED:

(a1) <input type="text" value="2"/>	COLOR 1 = White (Silver Gray) 2 = Black (Grey Brown) 3 = Brown (Amber)	(a1) <input type="text" value="2"/>	LIGHT DORMANCY 1 = Light Required 2 = Light Not Required	(a1) <input type="text" value="2"/>	HEAT DORMANCY 1 = Susceptible 2 = Not Susceptible
(c1) <input type="text" value="2"/>		(c1) <input type="text" value="2"/>		(c1) <input type="text" value="2"/>	
(c2) <input type="text" value="2"/>		(c2) <input type="text" value="2"/>		(c2) <input type="text" value="2"/>	

3. COTYLEDON TO FOURTH LEAF STAGE: NOTE: Provide a color photograph or photocopy of the fourth leaf from 20 day-old seedling grown under optimal conditions.

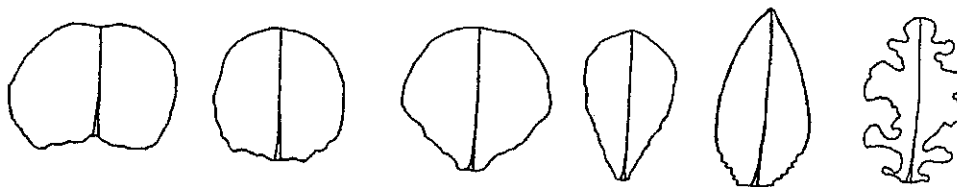
SHAPE OF COTYLEDONS: 1 = Broad 2 = Intermediate 3 = Spatulate

(a1) <input type="text" value="2"/>	(c1) <input type="text" value="2"/>	(c2) <input type="text" value="2"/>
-------------------------------------	-------------------------------------	-------------------------------------

SHAPE OF FOURTH LEAF: (a1)  (c1)  (c2)

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## 3. COTYLEDON TO FOURTH LEAF STAGE: (continued)



1. 2. 3. 4. 5. 6.

## LENGTH/WIDTH INDEX OF FOURTH LEAF: L/W x 10

(a1)  (c1)  (c2)  

## APICAL MARGIN:

1 = Entire  
2 = Crenate/Gnawed  
3 = Finely Dentate

4 = Moderately Dentate  
5 = Coarsely Dentate  
6 = Incised

7 = Lobed  
8 = Other (Specify) \_\_\_\_\_

(a1) (c1) (c2) 

## BASAL MARGIN: (Use the options for Apical Margin above)

(a1) (c1) (c2) 

## UNDULATION:

1 = Flat

2 = Slight

3 = Medium

4 = Marked

(a1) (c1) (c2) 

## GREEN COLOR:

1 = Yellow Green  
2 = Light Green

3 = Medium Green  
4 = Dark Green

5 = Blue Green  
6 = Silver Green

7 = Grey Green

(a1) (c1) (c2) 

## ANTHOCYANIN:

## DISTRIBUTION:

1 = Absent  
2 = Margin Only

3 = Spotted  
4 = Throughout

5 = Other (Specify) \_\_\_\_\_

(a1) (c1) (c2) 

## CONCENTRATION:

1 = Light

2 = Moderate

3 = Intense

(a1) (c1) (c2) 

## ROLLING:

1 = Absent

2 = Present

(a1) (c1) (c2) 

## CUPPING:

1 = Uncupped

2 = Slight

3 = Markedly

(a1) (c1) (c2) 

## REFLEXING:

1 = None

2 = Apical Margin

3 = Lateral Margins

(a1) (c1) (c2)

**4. MATURE LEAVES** (Observe Harvest-Mature Outer Leaves)

NOTE: Provide color photo of a harvest-mature leaf which accurately shows color and margin characteristics.

**MARGIN:****INCISION DEPTH:**  
(deepest penetration  
of the margin)

1 = Absent/Shallow (Dark Green Boston)

2 = Moderate (Vanguard)

3 = Deep (Great Lakes 659)

(a1) (c1) (c2) **INDENTATION:** (Finest divisions of the margin)

1 = Entire (Dark Green Boston)

4 = Crenate (Vanguard)

2 = Shallowly Dentate (Great Lakes 65)

5 = Other (Specify) \_\_\_\_\_

3 = Deeply Dentate (Great Lakes 659)

(a1) (c1) (c2) **UNDULATIONS OF THE  
APICAL MARGIN:**

1 = Absent/Slight (Dark Green Boston) 2 = Moderate (Vanguard)

3 = Strong (Great Lakes 659)

(a1) (c1) (c2) **GREEN COLOR:**

1 = Very Light Green (Bibb)

3 = Medium Green (Great Lakes)

5 = Very Dark Green

2 = Light Green (Minetto)

4 = Dark Green (Vanguard)

6 = Other (Specify) \_\_\_\_\_

(a1) (c1) (c2) 

138-C

138-B

138-B

**ANTHOCYANIN:****DISTRIBUTION:**

1 = Absent

3 = Spotted (California Cream Butter)

5 = Other (Specify) \_\_\_\_\_

2 = Margin Only (Big Boston)

4 = Throughout (Prize Head)

(a1) (c1) (c2) **CONCENTRATION:**

1 = Light (Iceberg)

2 = Moderate (Prize Head)

3 = Intense (Ruby)

(a1) (c1) (c2) **SIZE:**

1 = Small

2 = Medium

3 = Large

(a1) (c1) (c2) **GLOSSINESS:**

1 = Dull (Vanguard)

2 = Moderate (Salinas)

3 = Glossy (Great Lakes)

(a1) (c1) (c2) **BLISTERING:**1 = Absent/Slight  
(Salinas)2 = Moderate  
(Vanguard)3 = Strong  
(Prize Head)(a1) (c1) (c2) **LEAF THICKNESS:**

1 = Thin

2 = Intermediate

3 = Thick

(a1) (c1) (c2) **TRICHOMES:**

1 = Absent (Smooth)

2 = Present (Spiny)

(a1) (c1) (c2) **5. PLANT:****SPREAD OF FRAME LEAVES:**(a1)  cm(c1)  cm(c2)  cm

**5. PLANT: (continued)****HEAD DIAMETER:** (Market Trimmed with Single Cap Leaf)(a1)  cm(c1)  cm(c2)  cm**HEAD SHAPE:**

1 = Flattened

3 = Spherical

5 = Non-Heading

2 = Slightly Flattened

4 = Elongate

6 = Other (Specify) \_\_\_\_\_

(a1) (c1) (c2) **HEAD SIZE CLASS:**

1 = Small

2 = Medium

3 = Large

(a1) (c1) (c2) **HEAD PER CARTON:**(a1) (c1) (c2) **HEAD WEIGHT:**(a1)  g.(c1)  g.(c2)  g.**HEAD FIRMNESS:**

1 = Loose

2 = Moderate

3 = Firm

4 = Very Firm

(a1) (c1) (c2) **6. BUTT:****SHAPE:**

1 = Slightly Concave

2 = Flat

3 = Rounded

(a1) (c1) (c2) **MIDRIB:**

1 = Flattened (Salinas)

2 = Moderately Raised

3 = Prominently Raised (Great Lakes 659)

(a1) (c1) (c2) **7. CORE:****DIAMETER AT BASE OF HEAD:**(a1)  mm(c1)  mm(c2)  mm**RATIO OF HEAD DIAMETER/CORE DIAMETER:**(a1) (c1) (c2) **CORE HEIGHT FROM BASE OF HEAD TO APEX:**(a1)  mm(c1)  mm(c2)  mm**8. BOLTING:** (Give First Water Date: 4/19/04)

NOTE: First Water Date is the date seed first receives adequate moisture to germinate. This can and often does equal the planting date.

**NUMBER OF DAYS FROM FIRST WATER DATE TO SEED STALK EMERGENCE:** (summer conditions)(a1) (c1) (c2) **BOLTING CLASS:**

1 = Very Slow

3 = Medium

5 = Very Rapid

2 = Slow

4 = Rapid

(a1) (c1) (c2) **HEIGHT OF MATURE SEED STALK:**(a1)  cm(c1)  cm(c2)  cm

**8. BOLTING:** (continued)**SPREAD OF BOLTER PLANT:** (At widest point)(a1)   cm(c1)   cm(c2)   cm**BOLTER LEAVES:** 1 = Straight 2 = Curved(a1) (c1) (c2) **MARGIN:** 1 = Entire 2 = Dentate(a1) (c1) (c2) **COLOR:** 1 = Light Green 2 = Medium Green 3 = Dark Green(a1)   
146-A(c1)   
146-A(c2)   
146-A**BOLTER HABIT:****TERMINAL INFLORESCENCE:** 1 = Absent 2 = Present(a1) (c1) (c2) **LATERAL SHOOTS:** 1 = Absent 2 = Present(a1) (c1) (c2) **BASAL SIDE SHOOTS:** 1 = Absent 2 = Present(a1) (c1) (c2) **9. MATURITY:** (earliness of harvest-mature head formation)

NOTE: Complete this section for at least one season.

SEASON	APPLICATION VARIETY			MOST SIMILAR VARIETY			STANDARD REGIONAL CHECK VARIETY		
	No. of Days <sup>1</sup>			No. of Days <sup>1</sup>			No. of Days <sup>1</sup>		
Spring	100	86	75	98	83	72	98	86	72
Summer	52			54			50		
Fall	75	70		72	68		72	70	
Winter	112	99		110	99		108	95	

<sup>1</sup> First Water Date to Harvest

Give Planting Date(s) and Location(s):

Spring: 1/16/04 (Soledad, CA); 2/11/04 (Soledad, CA); 3/4/04 (Salinas, CA); WEST COAST

Summer: 4/19/04 (Gilroy, CA); WEST COAST

Fall: 7/22/04 (Castroville, CA); 7/29/04 (Chualar, CA); WEST COAST

Winter: 10/27/04 (Holtville, CA); 11/9/04 (Holtville, CA); Southwest

**10. ADAPTATION:****PRIMARY REGIONS OF ADAPTATION** (tested and proven adapted):

0 = Not Tested 1 = Not Adapted 2 = Adapted

 Southwest (CA and/or AZ desert) West Coast Northeast North Central Southeast Other (Specify) \_\_\_\_\_

## 10. ADAPTATION: (Continued)

## SEASON:

☐ 2 Spring (Area West Coast)      ☐ 2 Fall (Area West Coast)  
☐ 1 Summer (Area West Coast)      ☐ 2 Winter (Area South West)

☐ 0 GREENHOUSE: 0 = Not Tested      1 = Not Adapted      2 = Adapted  
☐ 1 SOIL TYPE: 1 = Mineral      2 = Organic      3 = Both

## 11. VIRAL DISEASES:

1 = Immune      3 = Resistant      5 = Moderately Resistant/Moderately Susceptible      7 = Susceptible      9 = Highly Susceptible

Big Vein	(a1)	<input type="checkbox"/> 3	(c1)	<input type="checkbox"/> 4	(c2)	<input type="checkbox"/> 4
Lettuce Mosaic	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Cucumber Mosaic	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Tomato Bushy Stunt, cause of dieback	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Turnip Mosaic	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Beet Western Yellows	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Lettuce Infectious Yellows	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Other (Specify) _____	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>

## 12. FUNGAL/BACTERIAL DISEASES:

1 = Immune      3 = Resistant      5 = Moderately Resistant/Moderately Susceptible      7 = Susceptible      9 = Highly Susceptible

Corky Root Rot (Races: _____)	(a1)	<input type="checkbox"/> 7	(c1)	<input type="checkbox"/> 7	(c2)	<input type="checkbox"/> 7
Downy Mildew (Races: <u>CA V-VIII</u> )	(a1)	<input type="checkbox"/> 7	(c1)	<input type="checkbox"/> 7	(c2)	<input type="checkbox"/> 7
Powdery Mildew	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Sclerotinia Drop	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Bacterial Soft Rot ( <i>Pseudomonas</i> spp. and others)	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Botrytis (Grey Mold)	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Verticillium Wilt	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Bacterial Leaf Spot	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Anthrachnose	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Other (Specify) _____	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>

## 13. INSECTS:

1 = Immune      3 = Resistant      5 = Moderately Resistant/Moderately Susceptible      7 = Susceptible      9 = Highly Susceptible

Cabbage Loopers	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Root Aphids	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Green Peach Aphid	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Lettuce Aphid	(a1)	<input type="checkbox"/> 7	(c1)	<input type="checkbox"/> 7	(c2)	<input type="checkbox"/> 7
Pea Leafminer	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>
Other (Specify) _____	(a1)	<input type="checkbox"/>	(c1)	<input type="checkbox"/>	(c2)	<input type="checkbox"/>

**14. PHYSIOLOGICAL STRESSES:**

1 = Immune	3 = Resistant	5 = Moderately Resistant/Moderately Susceptible	7 = Susceptible	9 = Highly Susceptible
Tipburn	(a1) <input type="text" value="5"/>	(c1) <input type="text" value="6"/>	(c2) <input type="text" value="6"/>	
Heat	(a1) <input type="text" value="7"/>	(c1) <input type="text" value="7"/>	(c2) <input type="text" value="7"/>	
Drought	(a1) <input type="text"/>	(c1) <input type="text"/>	(c2) <input type="text"/>	
Cold	(a1) <input type="text" value="4"/>	(c1) <input type="text" value="4"/>	(c2) <input type="text" value="4"/>	
Salt	(a1) <input type="text"/>	(c1) <input type="text"/>	(c2) <input type="text"/>	
Brown Rib (Rib Discoloration, Rib Blight)	(a1) <input type="text"/>	(c1) <input type="text"/>	(c2) <input type="text"/>	
Other (Specify) _____	(a1) <input type="text"/>	(c1) <input type="text"/>	(c2) <input type="text"/>	

**15. POST HARVEST STRESS:**

1 = Immune	3 = Resistant	5 = Moderately Resistant/Moderately Susceptible	7 = Susceptible	9 = Highly Susceptible
Pink Rib	(a1) <input type="text"/>	(c1) <input type="text"/>	(c2) <input type="text"/>	
Russet Spotting	(a1) <input type="text"/>	(c1) <input type="text"/>	(c2) <input type="text"/>	
Rusty Brown Discoloration	(a1) <input type="text"/>	(c1) <input type="text"/>	(c2) <input type="text"/>	
Internal Rib Necrosis (Blackheart, Grey Rib, Grey Streak)	(a1) <input type="text"/>	(c1) <input type="text"/>	(c2) <input type="text"/>	
Brown Stain	(a1) <input type="text"/>	(c1) <input type="text"/>	(c2) <input type="text"/>	

**16. BIOCHEMICAL OR ELECTROPHORETIC MARKERS:****17. COMMENTS:**

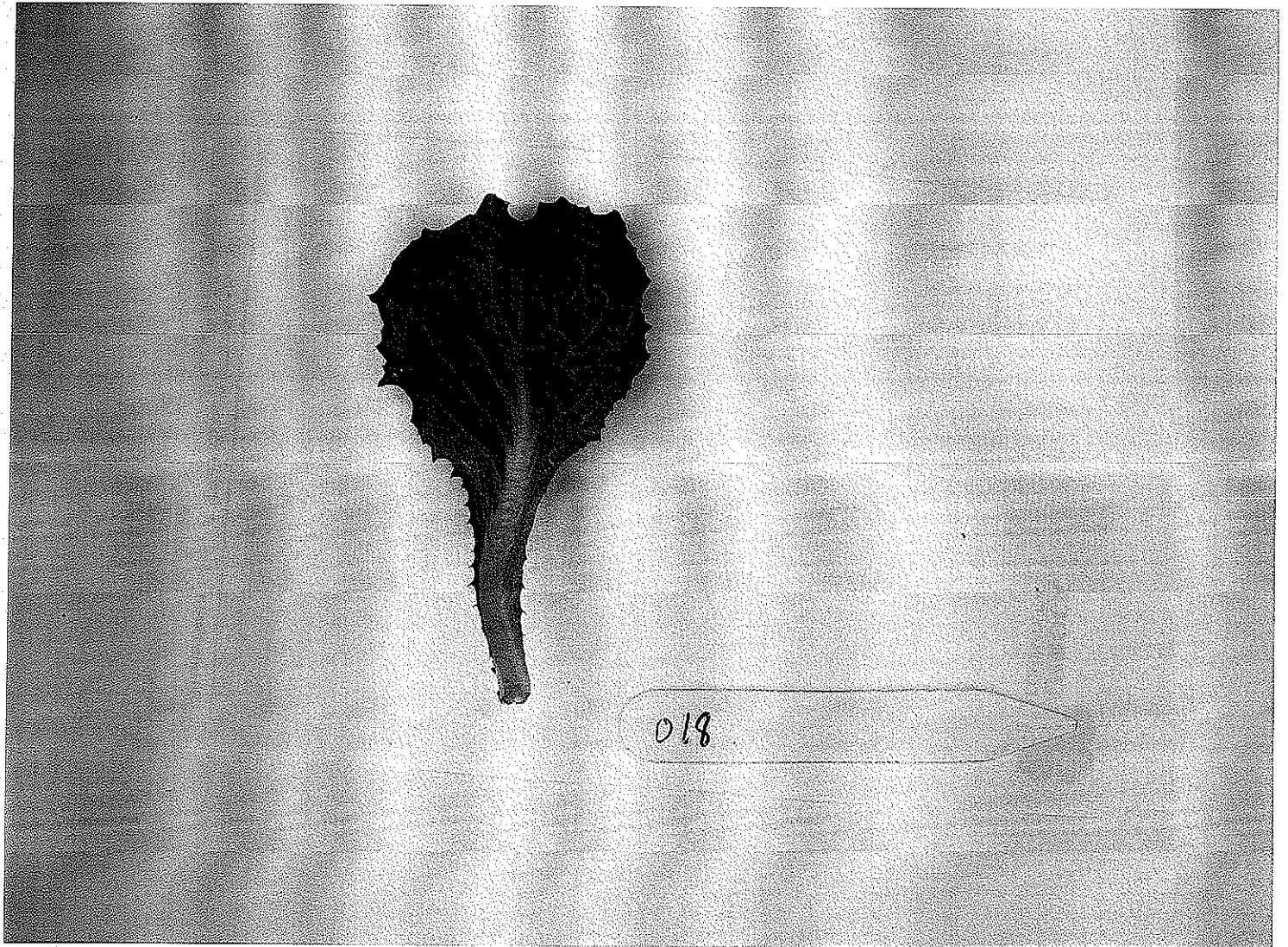
## SUGGESTED CHECK VARIETIES

TYPE	CHECK VARIETY
1 Cutting/Leaf	Waldmann's Green
2 Butterhead	Dark Green Boston
3 Bibb	Bibb
4 Cos or Romain	Parris Island
5 Great Lakes Group	Great Lakes 659-700
6 Vanguard Group	Vanguard
7 Salinas Group	Salinas
8 Eastern Group	Ithaca
9 Stem	Celtuce
10 Latin	Little Gem

## REFERENCES

- Bowring, J.D.C., 1969, "The Identification of Varieties of Lettuce (*Lactuca Sativa* L.)". Journal of the National Institute of Agricultural Botany 11:499-520. National Institute of Agricultural Botany, Cambridge, UK.
- Davis, R.M., K.V. Subbarao, R.N. Raid, and E.A. Kurtz, 1997. "Compendium of Lettuce Diseases". APS Press, St. Paul, MN.
- Michelmore, R.W., J. M. Norwood, D.S. Ingram, I.R. Crute and P. Nicholson. 1984. "The inheritance of virulence in *Bremia lactucae* to match resistance factors 3, 4, 5, 6, 8, 9, 10, and 11 in lettuce (*Lactuca sativa*)". Plant Pathology 32:176-177.
- Norwood, J.M., R.W. Michelmore, I.R. Crute and D.S. Ingram. 1983. "The inheritance of specific virulence of *Bremia lactucae* (Downy Mildew) to match R-factors 1, 2, 4, 6, and 11 in lettuce (*Lactuca sativa*)". Plant Pathology 32:176-177.
- Rodenburg, C.M., et al., 1960. "Varieties of Lettuce. An International Monograph", Instituut voor de Verdeling van Tuinbouwgewassen (IVT), Wageningen, NL.
- Ryder, E.J., 1999, *Lettuce, Endive, and Chicory*, CABI Publications, Wallingford, UK.





BLOCK BUSTER 4TH LEAF



BLOCK BUSTER MATURE LEAF

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP**

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)  Shamrock Seed Company, Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER  SSC 1370	3. VARIETY NAME  Blockbuster
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country)  3 Harris Place Salinas, CA 93901 USA	5. TELEPHONE (Include area code)  (831) 771-1500	6. FAX (Include area code)  (831) 771-1517
7. PVPO NUMBER <b>200500183</b>		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

**PLEASE NOTE:**

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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